use, and (4) the time of use. This information can be compared with data on spatial distribution of sensitive hydrogeologic zones and on water supply systems to help target efforts on source reduction, aquifer protection, water quality monitoring, and detection of improper waste disposal.

Maintaining a data base on the distribution of chemical use and disposal is essential for determining the type and location of sampling for chemical contaminants. The high cost of chemical analysis prevents routine monitoring for all potential contaminants. If a contamination event is detected, a data base on distributed use and disposal enables an efficient and speedy allocation of resources to determine the location of other possible contamination events. A use and disposal data base combined with chemical mobility information can be valuable in establishing chemical monitoring priorities for each location.

It is clear that the passage of the required laws and regulations and the ability to implement those laws are necessary to develop a good data base on chemical use and disposal. Potential ground water polluters, both private and public, typically resist the imposition of additional environmental and health regulations including data on chemical use. However, the attitudes of potential polluters have tended to change as it is recognized that the costs of cleanup of contaminated ground water can be very high. In the long run, collection of an adequate data base helps to protect sources of ground water discharge from the imposition of potentially large economic burdens by basing control programs on sound information.

An example of an extensive data base on chemical use is California's system on pesticides. This program applies only to those chemicals that are designated as restricted use pesticides. This program has been in existence since the early 1970s and currently includes about 80 pesticides. As discussed later in this chapter in the section on nonpoint source contaminants, the pesticide use data base has enabled California to determine which pesticides need to be monitored for in each location. Because of the large number of pesticides in use and the high cost for analyzing each one, the use data allowed the development of a cost-effective monitoring program.

Spatially distributed use data are also useful for other issues besides pesticides. For example, estimates of fertilizer use in Long Island indicated that residential use of fertilizer rather than septic tanks, as had been originally thought, is the major cause of nitrogen contamination of water supply wells.

Information on the industry (or in the case of agriculture, the crop) that is responsible for the use of the material is also helpful in directing efforts at source reduction. The alternatives for treating waste before disposal or for replacing the material by a less hazardous chemical depend on the production process and purpose for which the chemical is being used.